

Immunization for Children

Motivating Families to Complete a Series

WILLIS A. WINGERT, M.D., WILLIAM LARSEN, PH.D., EDWARD F. LENOSKI, M.D.,
AND DAVID B. FRIEDMAN, M.D., *Los Angeles*

■ *A communication gap in transmission of information from health professionals to indigent parents is demonstrated by the incomplete immunization of children attending pediatric health facilities. To bridge this gap, young women of similar ethnic and social backgrounds were recruited and trained briefly in counseling parents concerning adequate immunization.*

The effectiveness of these Health Aides in motivating parents to complete an immunization series was less than that of Public Health Nurses. Even so, the Aides were able to motivate two-thirds of the families that they counseled.

Conclusions were that a significant number of children appearing in a large public emergency room facility are unimmunized. Many of these children are not seriously ill and an immunization series can be initiated "on the spot." Motivation to complete the series can be done almost as satisfactorily by young rapidly trained indigenous Health Aides as by professionals.

ALTHOUGH POTENT VACCINES have been developed against many of the infectious diseases, a significant segment of the population has not been reached by the present methods of delivery of these agents. Only two-thirds of California pre-school children have been immunized against smallpox, diphtheria, tetanus and pertussis.¹ Of the children presenting for care in the Pediatric Emergency room (ER) of the Los Angeles County-University

of Southern California Medical Center, only 57 percent are completely immunized against poliomyelitis, diphtheria, tetanus and pertussis.²

These immunization deficiencies may be due to many factors: Lack of motivation of the parent; professional failure to inform the parent effectively about the vaccines available; general ignorance of good health practices; cultural patterns³; isolation of ethnic groups⁴; inability to make decisions readily⁴; and the confusing fragmentation of systematic medical care offered by social agencies.⁵

Health agencies have attempted to reach the unimmunized population through mass media (television, radio, newspapers, public posters) in various combinations. These techniques have not

This study was supported by the Children's Bureau, Department of Health, Education, and Welfare, Grant H 117.

From the Los Angeles County-University of Southern California Medical Center (Wingert, Lenoski, Friedman) and the Medical Data Research Center, University of Southern California (Larsen).

Submitted, revised, 18 September 1968.

Reprint requests to: Los Angeles County-University of Southern California Medical Center, 1200 North State Street, Los Angeles 90033 (Dr. Wingert).

proved particularly effective in low income areas.^{6,7}

Lack of response to local health department activities was demonstrated in our own Outpatient Department activities in 1966.⁸ The Los Angeles County Health Department set up an immunization clinic in the Pediatric Outpatient Department (OPD) of the Los Angeles County-University of Southern California Medical Center. Public Health Nurses and clerks screened the immunization records of as many pediatric patients as possible and initiated needed immunizations for siblings as well as patients not acutely ill. The parent was given a choice to return for completion of the series, either to the Pediatric OPD or the Public Health Center closest to his residence and a definite appointment was arranged at a convenient time. Of those to return to the hospital, 48 (56 percent) of 86 patients kept return appointments at the Pediatric OPD. Only 39 (27 percent) of 144 referred to the Health Department appeared at the health centers, and of the remainder, 31 returned to the Pediatric OPD regardless of their initial choice. These data indicated that a medical center, dispensing curative as well as preventive care, may have some advantage over the traditional Public Health Center as an effective site for immunizations, even though geographically less convenient.

The inability of professional medical personnel to communicate health information adequately to uneducated, and often disinterested and hostile parents from the lower social classes, may play a part in perpetuating ignorance of health practices. Fink⁹ noted that only 21 percent of patients attending a general pediatric clinic understood the nature of their illness, 30 percent took medication as directed, and 23 percent followed prescribed procedures. If a "special" Public Health Nurse or physician were employed, still only 65 percent understood the problem, 73 percent took prescribed medications and 83 percent carried out procedures. Bergman,¹⁰ Maddock,¹¹ and many others^{12,13} have noted the failure of up to 65 percent of the patients to take medications reliably. Korsch¹⁴ pointed out that lack of communication between clinic physician and parent leads to dissatisfaction and failure to comply with instructions.

Indigenous Health Aides, often from the minority populations served, have been utilized in many situations to break down ethnic and social communication barriers. Aides have been trained to function usefully as home managers in rural¹⁵ and metropolitan¹⁶ areas; as public health nurse as-

sistants¹⁷; as translator, advocate, and coordinator of social services¹⁸; and even as a provider of direct medical care in a remote Alaskan area with only radio contact with physician supervision.¹⁹ Reiff and Reissman emphasized the ability of the indigenous Aide to speak the language of the social class, to understand cultural problems, and to relate successfully to minority ethnic groups.²⁰

Several questions about the utilization of Health Aides remain unanswered objectively: How much training is required to make the Aides effective, yet not alienate them from the population they propose to serve? If over-trained, will an Aide turn to the technical language and professional attitude of the physician instead of using the colloquial language of the patient? Do natural skills decrease as professional skills and loyalty increase? What level of previous education should an Aide have obtained? Can a drop-out from high school with faulty study habits be trained to dispense technical knowledge? What is the ideal age range and the degree of practical experience in child care necessary for acceptance of the Aide by the parent?

The Study

To supply answers to these questions we proposed to (1) measure and compare the motivation of parents to return to the Pediatric Outpatient Department for the immunization of their child when instructed by Public Health Nurses or by indigenous Health Aides; and (2) determine whether a relatively short period of on-the-job training of young Aides, such as may be obtained from the Neighborhood Youth Corps or the Youth Opportunity Unit of Civil Service, is significantly effective in motivating parents for disease prevention.

Sample Population

The Pediatric Emergency Room had 32,753 patient visits between 8 a.m. and 4 p.m. during the period of this study (September 1966 to November 1967). The patients ranged in age from one day to fifteen years. The ethnic distribution was 56 percent Negro, 30 percent Mexican-American and 14 percent Caucasian.

Half of the families were on welfare. The unemployment rate of the father, if present in the family, was 30 percent. Almost 25 percent of the children under five years of age had an iron deficiency anemia. The population is highly mobile: 77 percent of the Negro families, 73 percent of the

Caucasians, and 60 percent of the Mexican-Americans had moved to the Los Angeles Area within the preceding five years. The extent to which the families utilized public facilities was demonstrated by the birth of 86 percent of the Negro children, 75 percent of the Mexican-American, and 60 percent of the Caucasian pediatric patients in a local public hospital. Forty-six percent of the patients had had over four previous visits to our Emergency Room.

The diseases observed were not unusual or severe. By the examining physician's judgment, 10 percent of the children were completely well or only slightly ill; 63 percent had a very mild illness; 25 percent were moderately ill; and only 2 percent were considered seriously ill. Approximately 35 percent of the illnesses were upper respiratory tract infections, including otitis media.

This population, therefore, represents an indigent, largely minority group accustomed to using public facilities, but inclined to seek medical attention for a child only when it becomes ill. The mild minor illnesses observed do not preclude initiating immunization or providing a recall injection ("booster") at the time of a casual ER visit.

Obtaining the Training Health Aides

Through the cooperation of the Youth Opportunity Unit of Civil Service and the Neighborhood Youth Corps, seven Negro and three Mexican-American women, ranging in age from 18 to 20 years, were enrolled in the program. All had completed high school. Five were married and had children but were separated from their husbands. One participant was dropped from the program because of intercurrent illness. None had criminal records.

The results of the study are based on the combined work of these Aides.

Two Public Health Nurses and a pediatrician instructed the Aides didactically two hours daily for one week concerning the protective value of immunizations, the number of injections required, correct dosage of poliomyelitis vaccine, interval between boosters, and possible reactions to the various vaccines. The Aides kept written notebooks for future reference.

The instructors used few technical terms in teaching the Aides, hoping that the Aides would retain their colloquial, idiomatic language when in contact with parents.

This form of teaching did not hold the attention

of several of the Aides. Reissman²⁰ has noted that on-the-job training is superior to classroom instruction for teaching at this level.

During the next three weeks, the Aides accompanied the Public Health Nurses in the ER, observing the nurses' methods in dealing with parents and their children and instructing parents under the nurses' supervision. After that time, the Aides were on their own, with the prerogative to use any method possible to influence parents to complete an immunization series.

During the course of the study, we designed simple literature as a teaching aid which might be used to reinforce the oral presentation. No word in this literature had over three syllables. Sentences were limited to ten to twelve words. The text was edited for understanding by the Health Aides themselves, together with other indigenous aides and clerks in the Outpatient Department.

Procedures

An Aide was stationed at the entrance to the examination rooms from 8 a.m. to 4 p.m., Monday, Wednesday and Friday. After patients had registered for care, the Aide obtained and recorded the history of previous immunizations from the parents. Children were considered eligible for immunization if they were over two months of age and had not had immunizations initiated elsewhere within the preceding three months. Siblings who accompanied the patient were screened similarly. The Aide, unassisted, determined what immunizations were required, and gave a record of this to the parent. The Aide then attempted, in her own words, to convince the parent of the importance of protection against infectious diseases.

Thereafter, the patient was examined in the ER. If the examining physician felt that the child was not too ill to receive an immunization, he approved the record by initialing it.

After the patient had been examined and treated, the Aide either brought the child to a nurse for vaccination or injection or personally administered poliomyelitis vaccine on a sugar cube.

After the vaccine had been administered, the Aide gave the patient a return appointment in writing, in either English or Spanish, for a specific day. The patient could appear anytime between 8:30 a.m. and 3:30 p.m. on that day.

The name of the Aide or Public Health Nurse and the telephone number were included on the slip and the family was asked to call for another

TABLE 1.—Individual Response to Scheduled Appointments.

Category of Return Visits	Public Health Nurse 1213 Scheduled Appointments		Health Aide 911 Scheduled Appointments		2124 Total Scheduled Appointments	
	No.	%	No.	%	No.	%
Returned with no reminder	677	56	429	46.9*	1,106	52
Returned with one postcard	204	17	152	17	356	17
Total returned spontaneously or with first reminder	881	73	681	64†	1,462	69
Returned with second reminder	(a)		(a)		222	10.4
Total individuals returned	(a)		(a)		1,684	79.4

Comparison of Public Health Nurse and Aide: * $X^2 = 15.5$ $p < 0.001$, † $X^2 = 18.6$ $p < 0.001$.

(a) Nurses only sent second reminders: either a postcard, telephone call or telegram.

TABLE 2.—Family Response to Scheduled Appointments.

Category of Return Visits	Public Health Nurse 859 Scheduled Appointments		Health Aide 627 Scheduled Appointments		1486 Total Scheduled Family Appointments	
	No.	%	No.	%	No.	%
Returned with no reminder	473	55	300	48	773	52
Returned with one postcard	141	16	102	16	243	16
Total returned spontaneously or with first reminder	614	71	402	64†	1,016	68
Returned with second reminder	113	8	(a)		113	8
Total families returned					161	77.7

Comparison of Public Health Nurse and Aide: * $X^2 = 7.27$ $p < .01$, † $X^2 = 8.75$ $p < .01$.

(a) Nurses only sent second reminders: either a postcard, telephone call or telegram.

appointment if they were unable to return on the specified day. The parents responded surprisingly frequently, and often spontaneously informed us if they planned to follow up the immunization series with a private physician or a Public Health Clinic visit.

On Tuesday and Thursday, three Caucasian Public Health Nurses followed the same procedures in the Emergency Room, but used a standard method of parent instruction. The group so instructed was used as a control.

Since the population we were dealing with frequently has transportation problems, we allowed seven days past the scheduled day before initiating follow-up procedures. In all cases, the first follow-up consisted of a hand-written postcard which was written by the person who had given the appointment to the patient. The Aides composed their cards without supervision. The new appointment was scheduled seven days later. Again, a week was allowed before the appointment was considered broken.

The second follow-up was always done by the Public Health Nurses. If the patient had a telephone, the Public Health Nurse called to arrange a new appointment date with the parent. If the patient did not have a telephone or could not be reached by phone, the nurse mailed another appointment by postcard. In a few cases, the nurses sent an appointment by telegram to test the efficacy of this method.

If the patient did not return after the second follow-up, he was dropped from the study.

Results

Results were tabulated both as to individual visits (Table 1) and as to family visits (Table 2), since many families had more than one child receiving immunizations.

Table 1 indicates that of 2,124 individual patients receiving an appointment for an immunization, 1,106 (52 percent) returned within a week of the scheduled appointment day without requiring further reminder. A single postcard sent to the remaining 1,018 increased the number returning to 1,462 (69 percent). A second postcard brought the total individual returns to 1,635 (77 percent). The time-consuming telephone and expensive telegram recall procedures could add only 49 (2 percent) more (Table 3).

TABLE 3.—Response to First Follow-Up of Missed Appointment.

Response	Individuals		Families	
	Sent by PHN	Sent by Aide	Sent by PHN	Sent by Aide
Number sent first postcard	536	482	386	328
Number returned after first postcard	204	152	141	102
Percent responding to first postcard	37.9	31.4*	37.5	31.1†

Comparison of Public Health Nurse and Aide: * $X^2 = 4.46$ $p > 0.05$, † $X^2 = 2.09$ $p > 0.05$.

TABLE 4.—*Effectiveness of Methods of Recall.*

Method	Individuals		Families	
	No.	%	No.	%
Received one postcard	1,018	..	714	
Returned after one postcard	356	35	243	34.1
Received a second postcard .	500	..	349	
Returned after second postcard	173	34.6	113	32.3
Received telephone call	109	..	78	
Returned after telephone call	46	42.2*	31	39.7†
Received telegram	13 (a)		9	
Returned after telegram	3	23.1	1	11.1

*Comparison with 2nd Postcard $\chi^2 = 2.04$ $p > .05$.

†Comparison with 2nd Postcard $\chi^2 = 1.23$ $p > .05$.

(a) Two telegrams undeliverable.

Table 2 indicates a similar family response. Sixty-eight percent of the families returned spontaneously or with a single postcard reminder. With a second card, an additional 113 (8 percent) could be recalled and the telegram or telephone recalled another 2 percent.

A significantly greater proportion of those families motivated by the Public Health Nurses returned spontaneously or with one reminder, than those counselled by the Health Aides—55 percent against 48 percent. The family response to the first postcard follow-up is shown in Table 3. There was no difference in response between those reminded by an Aide-written card and those reminded by the Public Health Nurses.

A second postcard was as effective as a telephone call in recalling children for immunization (Table 4). The telegram appeared least effective. (These data must be viewed with caution since the families were not randomly selected for method of reappointment. A greater proportion of the families motivated by the Public Health Nurses returned spontaneously or with one reminder than those counselled by the Aides.)

Discussion

A pronounced change has occurred during the past few decades in the volume and nature of hospital emergency room visits. In large urban pediatric centers, the emergency room is being utilized as a non-scheduled, non-urgent general medical clinic for acute episodic illness, especially by the indigent "core city" population who do not seek or cannot get prompt attention from private physicians.²¹ The emergency room has changed essentially into a community health station. Since this trend is unlikely to reverse in the immediate future, hospitals serving children who often lack adequate

health supervision now are presented with an opportunity to improve the total health of this segment of the population instead of rendering the customary fragmented episodic care.

What functions can and should a large county hospital pediatric ER assume beyond rendering episodic acute care to an indigent population? Certainly in many instances the illness is so slight that it does not preclude initiating preventive health measures, such as immunization. We estimate that at least 20 percent of all our patients are well enough to receive immunizations and a similar situation elsewhere in the United States can be surmised from the data of other observers.²²⁻²⁴ Thus, at least one forward step can be taken in converting episodic ER treatment into a semblance of comprehensive health supervision by immunizing these children whenever they appear.

Our Pediatric ER population includes many children who see the physician only when ill and who present the social and education characteristics of the hard-to-reach or the groups not responsive to public health measures. A pilot study indicated that many families, who received an initial immunization in our OPD, preferred to return here to complete the immunization series rather than visit a neighborhood health center.

Certainly the patients dealt with in the emergency room are not representative of the hard-to-reach. Many of those whom we immunized might have received vaccine eventually from the Health Department, in public school programs or through Head Start. Our efforts produced only 15 percent better results than those reported by the California State Department of Public Health.¹ However, without great effort, we were able to completely immunize (D-P-T, smallpox, poliomyelitis, and measles) 349 children in 14 months, and 1,327 more children are currently on the active roster of reappointments.

Regardless of the method of motivation or of parent recall, 20 percent of this population could not be inspired or persuaded to complete an immunization series in this clinic. Had we extended the reappointment time to include weekends or evenings, our 80 percent follow-up rate might have been higher. A previous study²⁵ indicated that many working parents, especially in minority groups, come to the ER at night when the family's only car becomes available. Traditional clinic hours may not meet the needs of a mother who works all day.²⁶ Other reasons for failure to com-

plete immunization may be related to a basic lack of interest or concern,^{27,28} to educational background,^{28,29} to family or ethnic social values and prejudices,⁴ to dissatisfaction with the outpatient care received on that day, and to general hostility.³⁰ Thirty-seven families transferred to private physicians' care or to a Public Health Center.

Thirty-five families changed residence, leaving no forwarding address. We may still be able to administer vaccine to some of the children of those families in the future if they reappear in the ER for acute illness.

The indigenous Health Aides did not prove statistically as effective as the Public Health Nurses in motivating families to return for completion of immunization. The Aides, although of similar ethnic and social status, apparently did not communicate more effectively with their peers than the Caucasian professionals. Factors influencing the failure to motivate more parents may be:

- The Aides were too young to appear authoritative or to command the respect of older parents. They actually were not peers of the families served.
- The training period was insufficient and the Aides lacked sufficient knowledge to be convincing. An extended period of training, probably on-the-job and not didactic,²⁰ may be necessary to teach fundamental facts and skills to this group.
- The communication gap may not be as wide as we believed and an experienced professional may speak the colloquial language adequately to motivate with relatively uncomplicated health instruction.

The Aides were far from ineffective, however; they induced 68 percent of their contacts to keep a follow-up appointment with either no reminder or use of a single postcard. The Aides were able to keep records successfully during the 14 months with a minimum of professional supervision.

A 4-cent postcard proved to be the most economical method of retrieving children for further immunization. The card seemed to be as effective as the telephone and required far less salaried professional time and effort. The results obtained by the telegram apparently did not justify the cost.

Consequently, we believe that a very inexpensive program of screening, immunization and follow-up using up to two postcard reminders can be installed readily in a large, busy Pediatric ER or Outpatient Clinic. A single supervising Public

Health Nurse and two Health Aides (at much lower salaries than the professionals) can manage a program successfully and at relatively little cost.

REFERENCES

1. Survey Research Center, University of California, Berkeley, California State Immunization Survey, Report No. 1: Immunization status and related characteristics of preschool children and their families, June 1965.
2. Wingert, W. A., Larson, W., and Friedman, D. V.: The demographic and ecological characteristics of a large urban pediatric outpatient population and implications for improving pediatric care, *Amer. J. Public Health*, 58:859-876, May 1968.
3. Opler, Marvin K.: Cultural values and attitudes on child care, *Children*, 2:45-50, 1955.
4. Suchman, Edward A.: Social factors in medical deprivation, *Amer. J. Public Health*, 55:1725-1733, Nov. 1965.
5. Corsa, L., and Jessup, B.: Tax-supported care for California children, *Calif. Med.*, 96:2-5, Feb. 1962.
6. Kegeles, S.: Some problems of the use of mass communications for public health, *Health Ed. J.*, 21:29-36, 1963.
7. Bissel, Dwight: Accident Prevention: The role of physicians and public health workers, Maxwell Halsey, Editorial Consultant, McGraw-Hill Books, New York, pp. 294-320, 1961.
8. Kogan, B. F., and Wingert, W. A.: The unreached segment in public health practice, In press, *Canad. J. Public Health*, 1967.
9. Fink, D., Martin, F., Cohen, M., Greycloud, M. A., and Malloy, M. S.: The management specialist in effective ambulatory care, Presented annual meeting American Public Health Association, Oct. 1967.
10. Bergman, A. B., and Werner, R. J.: Failure of children to receive penicillin by mouth, *New Eng. J. Med.*, 268:1334-1338, 13 June 1963.
11. Maddock, Robert K.: Patient cooperation in taking medicines, *JAMA*, 199:169-172, 16 June 1967.
12. Joyce, C. R. B.: Patient cooperation and sensitivity of clinical trials, *J. Chronic Dis.*, 15:1025-1036, Nov. 1962.
13. Wilcox, D. R. C., Gillan, R., and Hare, E. H.: Do psychiatric outpatients take their drugs? *Brit. Med. J.*, 2:790-792, Oct. 1965.
14. Korsch, Barbara: Doctor-patient communication, read at American Psychological Association Annual Meeting, 4 Sept. 1967.
15. Office of Economic Opportunity: Rural opportunities, Vol. 2, No. 1, Jan. 1967, Washington, D.C.
16. Broger, George: The indigenous worker: A new approach to the social work technician, *Social Work*, pp. 33-40, Apr. 1965.
17. Kern County Health Department: The seasonal farm worker's health project, Bakersfield, California (Mimeograph), Sept. 1966.
18. Peck, H. B., Hallowitz, E., and Reissman, F.: Report to the United States Office of Economic Opportunity on the South Bronx Neighborhood Service Center Program (Mimeographed).
19. Harrison, Thomas J.: Training for village health aides in the Kotzebue area of Alaska, *Public Health Rep.*, 80:565-572, July 1965.
20. Reiff, R., and Reissman, F.: The indigenous non-professional, National Institute of Labor Education, Mental Health Program, Report No. 3, pp. 8-9, 1964.
21. Weirnerman, E. R., Ratner, R. S., Robbins, A., and Lavenhar, M. A.: Yale Studies in Ambulatory Care V. Determinants of Use of Hospital Emergency Services, *Amer. J. Public Health*, 56:1037-1056, 1966.
22. Robinson, G. G., and Klonoff, H.: Hospital emergency service for children and adolescents, *Canad. Med. Assn. J.*, pp. 1304-1308, 13 May 1967.
23. Brown, B. S.: Regarding the emergency room, *New Eng. J. Med.*, 258:507-508, 1958.
24. Bergman, A. B., and Haggerty, Robert: The emergency clinic, *Am. J. Dis. Child.*, 104:36-44, 1962.
25. Wingert, W. A., Hanes, B., and Friedman, D. B.: The pediatric emergency patient, day and night, *Amer. J. Dis. Child.*, 115:48-56, Jan. 1968.
26. Hoff, Wilbur: Why health programs are not reaching the unresponsive in our communities, *Public Health Rep.*, 81:654-658, July 1966.
27. Hulka, Barbara S.: Motivation techniques in a career detection program: Utilization of community resources, *Amer. J. Public Health*, 57:229-240, Feb. 1967.
28. Cauffman, J. G., Petersen, E. L., and Emrick, J. A.: Medical care of school children: Factors influencing outcome of referral from a school health program, *Amer. J. Public Health*, Vol. 57, No. 1, pp. 60-73, Jan. 1967.
29. Peters, A. D., and Chase, C. L.: Patterns of health care in infancy in a rural southern county, *Amer. J. Public Health*, 57:409-423, Mar. 1967.
30. Storrow, H. A.: Social class and medical practice, *Southern Med. J.*, 56:385-389, Apr. 1963.